Behav. Res. Ther. Vol. 27, No. 6, pp. 677–682, 1989
Printed in Great Britain.

0005-7967/89 $3.00 + 0.00

Cognitive–behavioural factors and the persistence of intrusive thoughts in obsessional problems

PAUL M. SALKOVSKIS
University of Oxford Department of Psychiatry, Warneford Hospital, Oxford OX3 7JX, England

(Received 3 February 1989)

Summary—Jakes' critique fails to consider (i) the importance of appraisal of responsibility in initiating neutralising activity, and that (ii) obsessional patients negatively evaluate the *occurrence* as well as the content of intrusive thoughts. These factors are crucial because neutralising is presumed to be central to the development and maintenance of obsessional disorders. The current form of the hypothesis is outlined and recent data reviewed. Possible experimental investigations on the focus of therapeutic interventions are considered.

In his criticism of my cognitive–behavioural formulation of obsessive–compulsive disorder (Salkovskis, 1985), Jakes' (1989) main argument focuses on the proposed distinction between obsessional thoughts and the way that they are evaluated (negative automatic thoughts). Jakes believes this distinction to be unnecessary to account for obsessive–compulsive disorder, and points out what he believes to be inconsistencies in the examples used to illustrate this aspect of the formulation. According to Jakes, the hypothesis depends on the precision of this distinction, and he has concentrated on the exact details of these two operationally defined and closely related concepts. In doing so, he has misunderstood both the role played by appraisal within the context of cognitive approaches to emotional disorders in general and specifically in obsessive–compulsive disorder. His critique does not consider the crucial role proposed for *neutralising activity* in the specific cognitive–behavioural hypothesis. In particular, appraisal of the occurrence of unpleasant and unacceptable intrusive thoughts as indicating increased responsibility increases the likelihood of neutralising behaviour, thus linking obsessional thoughts with compulsive behaviour and/or thought rituals. With respect to therapy, he mistakenly claims that modifying appraisal without challenging the originating obsessional thought is "logically impossible"; this is clearly untrue.

The present paper takes the opportunity provided by Jakes' critique to refine and expand some of the details of the earlier formulation, and outlines the most recent form of the cognitive–behavioural hypothesis 5 years after the original formulation was written (see also Salkovskis, 1988, 1989a, b; Salkovskis and Warwick, 1988). Since all theories must eventually stand or fall on the basis of the available data, experiments relevant to the cognitive–behavioural hypothesis and the predictions made in the 1985 paper are reviewed. Finally, ways of evaluating the optimum focus of cognitive interventions are considered. The distinction between intrusive thoughts and negative automatic thoughts may not always be clear without consideration of the way an individual reacts to the fact that an intrusive and unacceptable thought occurred at all. This suggests a way to evaluate the optimum style in which to conduct cognitive treatment.

JAKES' CRITIQUE IN RELATION TO THE COGNITIVE–BEHAVIOURAL HYPOTHESIS

Jakes argues that the contrast between the irrationality of intrusive thoughts and the perceived rationality of negative automatic thoughts "is intended to supply the rationale for cognitive therapy". Therapy, he states, is based on 'rationally challenging' (sic) that NATs; this he regards as logically inconsistent. His view is therefore based on a misunderstanding of cognitive therapy, which Jakes sees as an enterprise in 'rational thinking', and on the intrusion–appraisal distinction, which he defines as irrational/rational rather than ego-dystonic/ego-syntonic as set out in the hypothesis (Salkovskis, 1985, pp. 578–579). Having made these erroneous assumptions, Jakes bases his critique on consideration of the illustrative clinical examples (described in Salkovskis, 1985; Salkovskis and Warwick, 1985) and some examples of his own, rather than on the hypothesis itself. The rest of his paper is then predicated on the 'criticism' that obsessional thoughts and their appraisal are often closely linked. Surprisingly, Jakes also goes on to suggest that the cognitive view "may be unable to explain why the OC neurotic experiences *more frequent* ... obsessions than do normals"; this issue is in fact dealt with in Salkovskis (1985) and at various points in the present paper.

If the cognitive–behavioural formulation of obsessions was based solely on the absolute separation of obsessional thoughts and their appraisal as he suggests, then some of Jakes' critique might be regarded as sound. However, his critique misrepresents both the cognitive model in general and the application to obsessions in particular. In order to deal with this critique more fully, it is important to consider first some general issues concerning cognitive–behavioural approaches to emotional problems before detailing the specifics of the cognitive–behavioural hypothesis of obsessional disorder and Jakes' critique.

Cognitive–behavioural approaches to emotional disorders: general issues

The basic assumptions behind the cognitive–behavioural formulation of obsessive–compulsive disorder are those commonly adopted by the range of cognitive theorists such as Beck (1976), Lang (1979), Rachman (1983), Teasdale (1983) and many others. Briefly, these are (i) that emotions result from the appraisal of events (including the appraisal of thoughts) rather than directly from those events; (ii) that pre-existing cognitive structures and processes (e.g. beliefs, attitudes, processing style) influence appraisal; (iii) that appraisal and emotional responses tend to have a reciprocal relationship; (iv) that a person's behaviour has an effect on appraisal and vice versa.

In the context of cognitive approaches to clinical problems, the outcome of appraisal is usually described in terms of "negative automatic thoughts" (Beck, 1976; Beck, Epstein and Harrison 1983); this concept is a convenient clinical shorthand for the outcome of the complex cognitive processes which are involved in the minute-by-minute appraisal of significant events. Thus, when 'modification of negative automatic thoughts' is described, this means an attempt to modify the outcome of the appraisal of the patient. In general, attempts to define the content of negative automatic thoughts are based on necessarily imprecise operational definitions. Nevertheless, such operational definitions can be helpful in making the transition from clinical studies to propositions which can be tested using the more extract methodology of experimental cognitive psychology (McLeod, 1987; Salkovskis, 1987). This methodological approach often acts as a bridge to ensure greater clinical relevance in the direction taken by research into psychopathology and its modification. Approximations such as 'negative automatic thoughts' are readily acceptable and applicable for both patients and clinicians. When appraisal is defined in terms of a 'negative automatic thought', this tends to be defined in terms of a belief of variable intensity, fluctuating according to the individual's mood, the context in which it is experienced and so on. Cognitive–behavioural approaches to therapy generally take account (and advantage) of these fluctuations. Thus, the cognitive–behavioural formulation introduced the idea of negative automatic thoughts within the more important context of the way in which an individual appraises or interprets the occurrence of obsessional intrusions. Therapy is directed at helping the patient to consider *alternative*, less negative interpretations; these may or may not be more 'rational' than the negative interpretations. (For example, patients who have suffered a setback in therapy and believe this is to be a sign that they will never get better can be helped to interpret their present problems as an ideal opportunity to practice their newly learned coping skills, so they will be better able to deal with future setbacks. Neither view is necessarily more rational.)

The cognitive–behavioural formulation of obsessions: the specific hypothesis

It is hypothesised that *clinical obsessions are intrusive cognitions, the occurrence and content of which patients interpret as an indication that they might be responsible for harm to themselves or others unless they take action to prevent it.* This interpretation results in attempts to both suppress and to neutralise the thought, image or impulse. Neutralising is defined as voluntarily initiated activity which is intended to have the effect of reducing the perceived responsibility and can be overt or covert (compulsive behaviour or thought rituals). As consequence of neutralising activity, intrusive cognitions become more salient and frequent, they evoke more discomfort and the probability of further neutralising increases. Attempts to suppress the thought increase the likelihood of recurrence.

This hypothesis can be expanded into a number of propositions:

(1) The basis of obsessional problems is the occurrence of intrusive cognitions. Such intrusive cognitions occur as an automatic process, probably linked to an individual's current concerns and are a universal human phenomenon.

(2) Of themselves, intrusive cognitions have no hedonic tone, but acquire it as a result of appraisal; thus, intrusions can become positively, negatively or neutrally toned, depending on the context in which they occur (see Edwards and Dickerson, 1987b; England and Dickerson, 1988).

(3) Part of the appraisal of an intrusion will concern the implications of an intrusion and the need for further action. If the intrusion is appraised as having no implications, further processing is unlikely. At least two aspects of the intrusion are subject to appraisal; the occurrence and content. If appraisal suggests a specific reaction (including attempts to suppress or avoid the thought), controlled processing will follow (Anderson, 1985).

(4) Behavioural reactions (overt or covert) to intrusive cognitions result in such cognitions acquiring a degree of salience and priority of processing. Thus, when an intrusive cognition or its content have some direct implications for the reactions of the individual experiencing it, processing priority will increase and further appraisal and elaboration become more likely. Under most circumstances, personally relevant ideas will therefore tend to persist and be the subject of further thought and action; irrelevant ideas can be considered but no further thought or action will ensue. However, sometimes unpleasant or upsetting cognitions cannot be resolved and become more persistent, as in depression, anxiety and worry.

(5) In instances where the occurrence of a particular type of thought is appraised as an indication that the individual has become responsible for harm to themselves or others, then the occurrence and content of the thought becomes both a source of discomfort and an imperative signal for action which is intended to neutralise the thought and the potentially harmful consequences of its occurrence. This distinguishes obsessional cognitions from anxious and depressed cognitions.

(6) Appraisal of responsibility and consequent neutralising can arise from a sensitivity to responsibility arising from a failure to control thoughts, and from an increase in the level of perceived personal responsibility. The majority of non-clinical *S*s do not regard the occurrence of intrusive thoughts as being of special significance.

(7) Once neutralising responses to intrusive thoughts are established they are maintained by the association with the perception of reduced responsibility and discomfort, whilst the recurrence of the intrusive cognitions becomes more likely as a result of (3), (4) and (5) above. Thus, obsessional problems will occur in individuals who are distressed by the occurrence of intrusions and also believe the occurrence of such cognitions indicates personal responsibility for distressing harm unless corrective action is taken.

The appraisal of intrusive thoughts as having implications for responsibility for harm to self or others is therefore seen as important because appraisal links the intrusive thought with both distress and the occurrence of neutralising behaviour. If the appraisal solely concerns harm or danger without an element of responsibility, then the effect is more likely to be anxiety or depression, which may become part of a mood-appraisal spiral (Teasdale, 1983), but would not result in clinical obsessions without the responsibility–neutralising link. Thus, Jakes asks whether hearing someone else making blasphemous statements or talking about harming one's children might not be upsetting in itself. Indeed this may be so-if these utterances are interpreted as personally significant, as may often be the case (e.g. "perhaps this person wants to harm my children"). However, without appraisal of responsibility, an obsessional episode would not result. An obsessional pattern would be particularly likely in obsessional patients when such thoughts or statements are self-initiated (e.g. "these thoughts might mean I want to harm the children; I must guard against losing control"). The useful comparison here is the contrast between the effects of asking an obsessional checker to lock the door or to watch someone else locking the same door. This responsibility effect is also demonstrated by the experiments conducted by Roper and Rachman, (1975) and Roper, Rachman and Hodgson (1973), in which discomfort producing stimuli which provoked checking rituals produced little or no discomfort or checking when the therapist was present.

Thus, the core of the formulation is to be found in the occurrence of neutralising behaviour linked to the appraisal of responsibility. That is, "if the automatic thoughts arising from the intrusion do not include the possibility of being in some way responsible... then neutralising is very unlikely to take place, and the result is likely to be heightened anxiety and depression rather than an obsessional problem" (Salkovskis, 1985, p. 579). Part of this appraisal arises from the occurrence of the intrusion itself; the examples Jakes finds problematic can easily be dealt with by the type of beliefs listed in Salkovskis, 1985, p. 579; for example, "not neutralising when an intrusion has occurred is similar or equivalent to seeking or wanting the harm involved in the intrusion to happen". The appraisal will then tend to be of the form "My thinking this thought means...". It is thus possible to have an appraisal which is regarded as sensible based on a thought which is ego-dystonic.

Using the same examples, Jakes then goes on to consider therapy and makes the remarkable assertion that "challenging the NAT while not challenging the obsessional thought is logically impossible". Such an exercise is a prominent feature of cognitive therapy (see, for example, Beck, Emery and Greenberg, 1985), and is, of course, perfectly logical and possible. In the example Jakes discusses, the patient could be told "I cannot gauarantee that you have not contaminated your children with something that came from the hospital. Supposing it were true that you did have traces from the hospital; can we examine the conclusions that you draw from that?". Another example is the patient who was troubled by the thought that she may have left the gas on and would therefore be responsible for the deaths of others: when asked to think about what would be the worst thing that could actually happen if she did, she concluded that she might end up with a larger than usual gas bill! This intervention resulted in an immediate cessation of checking. It is thus perfectly feasible (and logical) to modify appraisal without challenging the intrusion. The same approach can readily be applied to the other examples cited by Jakes.

Jakes' own position?

It is hardly surprising, then, that Jakes believes he finds "theoretical confusion" in the cognitive–behavioural formulation, when he considers only part of the theory. The confusion arises mainly because he omits consideration of the key role proposed for neutralising (defined as compulsive behaviours and thought rituals), and therefore misses the significance of appraisal of responsibility. It may be that Jakes has ignored the relationship between appraisal and neutralising because of the close relationship between this part of the formulation and previous behavioural approaches. However, part of the value of the cognitive–behavioural hypothesis lies in the compatibility with previous theoretical views which were backed by a very substantial body of empirical work (e.g. Rachman, 1978; Rachman and Hodgson, 1980). Far from ignoring such work, paradigm shifts should build upon and thereby strengthen previous work rather than attempting to discard it or revitalise previously invalidated propositions (Salkovskis, 1986). This approach contrasts with work such as that of Reed, which, as Jakes points out, stands in opposition to behavioural views. The latter principle may help Jakes to understand why Salkovskis, when discussing McFall and Wollersheim (1979), 'takes these authors to task' with respect to the adoption of psychoanalytic principles never previously found to be of any worth in this area.

Jakes suggests that Salkovskis could argue that appraisal explains "why the obsessions experienced by normals do not provoke the disturbance experienced by OC neurotics" but that this is only "one of many possible differences" (sic) which could account for this. Indeed so; however, the combination of appraisal and neutralising provides a particularly elegant account which has subsequently received empirical support (see empirical findings described below, Edwards and Dickerson, 1987a). There is considerably less support for the view adopted by Jakes that OC patients might be "less good at excluding unwanted thoughts". Consistent with Salkovskis' cognitive–behavioural view, Wegner, Schneider, Carter and White (1987) were able to demonstrate the efforts directed at the deliberate control of instrusive thoughts are counter-productive. That is, intrusions became more frequent when subjected to deliberate attempts at supression. Thus, rather than being "less good at excluding unwanted thoughts", obsessionals may be trying too hard to exclude thoughts appraised as threatening.

In this last critique, Jakes reveals something of his own views concerning the basis of obsessions in some form of generalised cognitive deficit. Thus far, the very specificity of obsessional problems tends to defeat such theorising; for example, how can a generalised cognitive problem account for phenomena such as the patient who cannot be sure that he has closed his house door but is certain that his wife has, and who never has problems with a broom cupboard? Particular cognitive styles or deficits may be vulnerability factors as with biological factors in anxiety, but have not yet provided a sufficient account of obsessional disorders. The most promising information processing approaches again depend on the element of appraisal given the presence of powerful interactions between type of material and obsessional status (Persons and Foa, 1984). Furthermore, the success of exposure treatments has not been accounted for in terms of generalised cognitive deficits. The cognitive–behavioural view explicity predicts that the psychological dysfunction is capable of being rapidly reversed by cognitive and/or behavioural means.

EMPIRICAL FINDINGS

Since the publication of the cognitive-behavioural formulation of obsessions in 1985, a number of relevant studies have been conducted. Most of these have concerned intrusive thoughts in normal populations. This emphasis is appropriate because the cognitive–behavioural hypothesis not only refers to the maintenance of obsessions, but also the transition from normal intrusive thoughts to obsessional disorder as a result of enhanced appraisal of responsibility combined with increased neutralising. Data from our own and other groups fall into four principal areas, showing that (i) aversiveness is not a primary property of intrusive thoughts, but is related to their salience and (presumably acquired) priority of processing; (ii) *S*s who neutralise show elevated belief in general attitudes concerning responsibility; (iii) that increasing the salience of intrusive thoughts by having *S*s deliberately neutralise increases the associated discomfort—increasing salience by deliberate suppression increases frequency; (iv) application of cognitive–behavioural principles to treatment of clinical cases can be at least as successful as exposure treatment.

(1) Evidence that the salience of intrusive thoughts is linked to aversiveness. In a carefully conducted series of experiments using non-clinical *S*s, Dickerson and his colleagues have presented data from both survey and experimental studies suggesting that the uncontrollability of intrusive thoughts depends on their salience (defined as attentional value) rather than the content of the thoughts (England and Dickerson, 1988). Edwards and Dickerson (1987a) demonstrated that unpleasant intrusive thoughts are significantly more salient than neutral thoughts as indexed by the time taken to replacement by another thought. Edwards and Dickerson (1987a) point out that these data are consistent with Salkovskis' (1985) view that, when considering the origin of obsessional problems, the response to the intrusive thought may be more

important than the characteristics of the thought itself. Edwards and Dickerson (1987b) evaluated the occurrence and characteristics of positive and negative intrusions, finding that positive intrusions were somewhat more common. The primary characteristics of positive and negative intrusions were found to be very similar as indexed by controllability, relation to external triggers, form, lifespan and duration. The variables which differentiated positive from negative intrusions were those regarded as the result of secondary evaluations in the present analysis; rating of congruence with beliefs, general acceptability and harmfulness.

(2) Evidence for a link between beliefs concerning responsibility and the occurrence of neutralising. We have completed a survey of 243 non-clinical *S*s, eliciting a range of information about intrusive thoughts (Salkovskis and Dent, 1989). The prediction was upheld by the data, which showed that *S*s who reported neutralising behaviour scored significantly higher on the Maudsley Obsessive–Compulsive Inventory (Hodgson and Rachman, 1978) than did those not reporting such behaviour. There were no differences on clinical measures of anxiety and depression. As predicted, *S*s who neutralised had significantly higher scores on belief ratings of attitudes concerning responsibility for harm, but not on attitudes of threat or loss without a component of responsibility.

(3) Evidence that neutralising activity increases discomfort associated with, and frequency of, intrusive thoughts. We have recently completed an experiment designed to test the prediction that increased neutralising at Time 1 would be associated with greater discomfort at Time 2 as compared to a group randomly assigned to a control task (Salkovskis, Westbrook, Davis, Jeavons and Gledhill, 1989). Normal *S*s who reported that they neutralised their intrusive thoughts were selected from a very large pool of normal subjects. After a detailed interview designed to elicit distressing intrusive thoughts and specific neutralising thoughts, the *S* recorded their intrusive thought on a 30 sec loop tape. Half of the *S*s were instructed to use their usual neturalising thought after listening to each occurrence of the thought and the other half asked to distract for an equivalent period. (Counting backwards was used to control for differences in functional exposure which would otherwise have been present; *S*s who used counting as a neutralising response were excluded from the study.) The dependent variable was the subjective rating of discomfort over 16 consecutive presentations of the intrusive thought. After a pause of 30 min, *S*s rated their discomfort while listening to the same loop tape without neutralising or counting. We predicted that the group who neutralised their intrusive thought during the first presentation would experience greater discomfort on the second presentation than the group who had counted.

The preliminary results of this experiment show that prior to the experiment, the two groups experienced equivalent levels of discomfort in response to the thoughts used in the experiment. During the experimental phase, neutralising was associated with significantly higher ratings of discomfort than counting during the first part of the *first* stage of presentation (i.e. when the *S*s began to respond to their thought by neutralising or counting), but this difference disappeared as this stage progressed. During the second presentation (during which both groups merely listened to the tape), the group who had previously neutralised showed a large and highly significant increase in discomfort relative to the control condition, which persisted throughout the presentation period. Thus, neutralising intrusive thoughts was associated with *increased* discomfort both initially and later when neutralising was no longer being carried out.

Using similar reasoning, Wegner *et al.* (1987) asked normal *S*s to try *not* to think of white bears, then measured the frequency of subsequent expression of thought. In two experiments, they found that efforts directed at thought supression (instructions *not* to think of a white bear) had the apparently paradoxical effect of *increasing* the subsequent frequency of occurrence of ideas of white bears.

(4) Evidence from treatment studies. Although treatment studies cannot logically provide evidence which directly supports the cognitive–behavioural hypothesis, the failure of clinical applications derived from, or related to, the cognitive–behavioural hypothesis would certainly be problematic. Emmelkamp and his colleagues have now reported two controlled studies demonstrating that a cognitive intervention was as effective as exposure with response prevention (Emmelkamp, Visser and Hoekstra, 1988; Emmelkamp, 1988). The emphasis in therapy appears to have been modifying the way patients interpreted their obsessional thoughts (Hoekstra, personal communication). These studies suggest that altering the thoughts and beliefs associated with obsessional disorders can be an effective intervention. Salkovskis and Westbrook (1989) have described the importance of dealing with overt and covert neutralising responses in the treatment of obsessional ruminations.

THE FOCUS OF THERAPY

Jakes' article highlights the fact that the link between obsessions and their appraisal can be confusing for those inexperienced in cognitive–behavioural treatments, and that to challenge the appraisal acknowledges the occurrence of the intrusion. When discussion of content is involved it is in a style which emphasises that the *reaction* to the obsessional thought (including neutralising) is the basis of the problem. Thus, Salkovskis (1985, p. 581) argues that therapy should "*concentrate* not on modification of intrusions . . . but on automatic thoughts consequent on the intrusions, and on the beliefs which give rise to *these*" (emphasis added). Bland reassurance, often involving detailed discussions of tiny probabilities, is notoriously ineffective for obsessional patients (Marks, 1987; Rachman and Hodgson 1980; Salkovskis and Warwick 1988; Salkovskis 1989a; Warwick and Salkovskis, 1985), probably because it functions as a form of neutralising. Not debating the obsessional thought itself is stressed to prevent the unwary, inexperienced and overenthusiastic therapist from attempting to deal with obsessional disorders by bland refutation of the fears expressed. This caution is particularly necessary given the avid and subtle way which such patients seek reassurance (Salkovskis and Kirk, 1989; Salkovskis and Warwick, 1988; Salkovskis and Westbrook, 1987).

As with other anxiety disorders, the line between avoidance and therapeutic strategies is crucial; in anxious patients, avoidance is often intended to deal with feared disasters, while therapeutic coping strategies are intended to deal with the anxiety experienced. In obsessions, there is a considerable difference between reassurance involving denial of the truth of the intrusion as opposed to detailed and skilled therapy using discussion and behavioural experiments intended to elicit and modify interpretation of the occurrence of the intrusion. As in other psychological treatments, the intention is to help patients to understand what is happening, how it accounts for their problems and what they can do about it. Without such a context, the patient will continue to apply previous "logical but costly" solutions to a situation perceived as threatening. It would therefore be interesting to compare procedures which emphasised either (a) challenging the patient's appraisal of such thoughts and their occurrence, particularly focussing on issues concerning responsibility for harm within the context of a positive psychological formulation with (b) a control procedure which "rationally challenges" the accuracy of the

intrusive thoughts themselves. This comparison could readily be conducted in the context of single case experiments, perhaps using an alternating treatments design across treatment sessions. Such an experiment might also help validate the clinical utility of the distinction which Jakes finds unhelpful.

CONCLUSION

Jakes' critique is not supported by logic or data. The cognitive–behavioural hypothesis has received some support from recent studies. Summarising the present statement: intrusive thoughts gain priority of processing as a consequence of voluntarily directed responses rather than as an initial characteristic of the intrusive thoughts themselves. Those intrusive thoughts which elicit some kind of deliberate response (and therefore controlled processing) in the individual experiencing them will be more likely to persist, whether the thoughts are normal or abnormal, positive, negative or neutral. Such responses result from appraisal of responsibility. The principal aim of cognitive–behavioural treatment for obsessional problems is therefore to help the patient conclude the obsessional thoughts, however distressing, are irrelevant to further action. Teaching the patient to control the occurrence of intrusive thoughts will be beneficial only if it alters the way in which their occurrence is interpreted, such as by convincing the patient that intrusive thoughts are at least partially under their own control and therefore of no special significance. Thus, the key to control of obsessional thoughts may be to learn that the exercise of such control is unnecessary.

Acknowledgements—The author is grateful to the Medical Research Council (U.K.) for their support, and to Lorna Hogg, Hilary Warwick and David Westbrook for helpful comments on earlier versions of this paper.

REFERENCES

Anderson J. R. (1985) *Cognitive Psychology and its Implications*. Freeman, New York.
Beck A. T. (1976) *Cognitive Therapy and the Emotional Disorders*. International University Press, New York.
Beck A. T., Emery G. and Greenberg R. L. (1985) *Anxiety Disorders and Phobias: A Cognitive Perspective*. Basic Books, New York.
Beck A. T., Epstein N. and Harrison R. (1983) Cognitions, attitudes and personality dimensions in depression. *Br. J. Cog. Psychother.* **1**, 1–16.
Edwards S. and Dickerson M. (1987a) Intrusive unwanted thoughts: a two stage model of control. *Br. J. Med. Psychol.* **60**, 317–328.
Edwards S. and Dickerson M. (1987b) On the similarity of positive and negative intrusions. *Behav. Res. Ther.* **25**, 207–211.
England S. L. and Dickerson M. (1988) Intrusive thoughts: unpleasantness not the major cause of uncontrollability. *Behav. Res. Ther.* **26**, 279–277.
Emmelkamp P. M. G. (1988) Cognitive and relational factors in the treatment of anxiety disorders. Paper presented at the World Congress of Behaviour Therapy, Edinburgh, September 1988.
Emmelkamp P. M. G., Visser S. and Hoekstra R. J. (1988) Cognitive therapy vs exposure *in vivo* in the treatment of obsessive–compulsives. *Cog. Ther. Res.* **12**, 103–114.
Hodgson R. J. and Rachman S. J. (1978) Obsessional–compulsive complaints. *Behav. Res. Ther.* **15**, 389–385.
Jakes I. (1989) Salkovskis on obsessional–compulsive neurosis: a critique. *Behav. Res. Ther.* **27**, 673–675.
Lang P. J. (1979) A bioinformational theory of emotional imagery. *Psychophysiology* **16**, 495–512.
McLeod C. (1987) Cognitive psychology and cognitive therapy. In *Clinical Psychology: Research and Development* (Edited by Dent H. R.). Croom Helm, London.
McFall M. E. and Wollersheim J. P. (1979) Obsessive–compulsive neurosis: a cognitive–behavioural formulation and approach to treatment. *Cog. Ther. Res.* **3**, 333–348.
Marks I. M. (1987) *Fears, Phobias and Rituals*. OUP, New York.
Persons J. and Foa E. B. (1984) Processing of fearful and neutral information by obsessive–compulsives. *Behav. Res. Ther.* **22**, 259–265.
Rachman S. J. (1978) Anatomy of obsessions *Behav. Analyt. Mod.* **2**, 253–278.
Rachman S. J. (1983) Irrational thinking, with special reference to cognitive therapy. *Adv. Behav. Res. Ther.* **5**, 63–88.
Rachman S. J. and Hodgson R. (1980) *Obsessions and Compulsions*. Prentice–Hall, Englewood Cliffs, N.J.
Roper G. and Rachman S. J. (1975) Obsessional–compulsive checking: replication and development. *Behav. Res. Ther.* **13**, 25–32.
Roper G., Rachman S. J. and Hodgson R. (1973) An experiment on obsessional checking. *Behav. Res. Ther.* **11**, 271–277.
Salkovskis P. M. (1985) Obsessional–compulsive problems: a cognitive–behavioural analysis. *Behav. Res. Ther.* **25**, 571–583.
Salkovskis P. M. (1986) The cognitive revolution: new way forward, backward somersault or full circle? *Behav. Psychother.* **14**, 278–282.
Salkovskis P. M. (1987) Cognitive therapy: is it always cognitive, is it always therapy? In *Clinical Psychology: Research and Development* (Edited by Dent H. R.). Croom Helm, London.
Salkovskis P. M. (1988) Intrusive thoughts and obsessional disorders. In *Current Issues in Clinical Psychology* (Edited by Glasgow D. and Eisenberg N.), Vol. 4. Gower, London.
Salkovskis P. M. (1989a) Obsessions and compulsions. In *Cognitive Therapy: A Clinical Casebook* (Edited by Scott J., Williams J. M. G. and Beck A. T.). Croom Helm, London.
Salkovskis P. M. (1989b) Obsessions and intrusive thoughts: clinical and non-clinical aspects. In *Anxiety Disorders: Annual Series of European Research in Behaviour Therapy* (Edited by Emmelkamp P., Everaerd W., Kraaymaat F. and van Son M.), Vol. 4. Swets, Amsterdam.
Salkovskis P. M. and Dent H. R. (1989) Intrusive thoughts, impulses and imagery: cognitive and behavioural aspects. Manuscript in preparation.
Salkovskis P. M. and Kirk J. (1989) Obsessional Disorders. In *Cognitive–Behavioural Treatment for Psychiatric Disorders: A Practical Guide* (Edited by Hawton K., Salkovskis P. M., Kirk J. and Clark D. M.). Oxford University Press, Oxford.

Salkovskis P. M. and Warwick H. M. C. (1985) Cognitive therapy of obsessive–compulsive disorder—treating treatment failures. *Behav. Psychother.* **13,** 243–255.

Salkovskis P. M. and Warwick H. M. C. (1988) Cognitive therapy of obsessive–compulsive disorder. In *The Theory and Practice of Cognitive Therapy* (Edited by Perris C., Blackburn I. M. and Perris H.). Springer, Heidelberg.

Salkovskis P. M. and Westbrook D. (1987) Obsessive–compulsive disorder: clinical strategies for improving behavioural treatments. In *Clinical Psychology: Research and Development* (Edited by Dent H. R.). Croom Helm, London.

Salkovskis P. M. and Westbrook D. (1989) Behaviour therapy and obsessional ruminations: can failure be turned into success? *Behav. Res. Ther.* **27,** 149–160.

Salkovskis P. M., Westbrook D., Davis J., Jeavons A. and Gledhill A. (1989) The effects of neutralising on discomfort and persistence of intrusive thoughts: an experiment investigating the etiology of obsessive–compulsive disorder. Manuscript in preparation.

Teasdale J. D. (1983) Negative thinking in depression: cause, effect or reciprocal relationship? *Adv. Behav. Res. Ther.* **5,** 3–25.

Warwick H. M. C. and Salkovskis P. M. (1985) Reassurance. *Br. Med. J.* **290,** 1028.

Wegner D. M., Schneider D. J., Carter S. R. and White T. L. (1987) Paradoxical effects of thought suppressing. *J. Person. Soc. Psychol.* **53,** 5–13.